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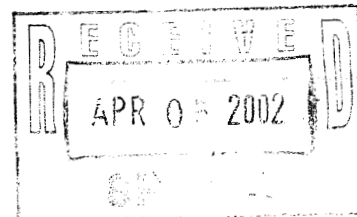
**TO:** Richard Long, EPA Region VIII

**FROM:** Mark Trechok

**SUBJECT:** Comments on Draft Dispersion

Modeling Analysis of PSD — ND.

14 pages, including cover sheet. If you do not receive all pages, please call (701) 483-2851



April 5, 2002

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**RE: Comments on EPA's January, 2002 Draft Dispersion Modeling Analysis of PSD Class I Increment Consumption in North Dakota and Eastern Montana**

Dear Mr. Long:

The Dakota Resource Council (DRC) respectfully submits the following comments on EPA's January, 2002 Draft Dispersion Modeling Analysis of PSD Class I Increment Consumption in North Dakota and Eastern Montana, which you recently sent out to interested parties, including DRC, for review and comment. Because there are a number of serious flaws in EPA's draft analysis, it should be revised significantly.

First, some history: On October 21, 1999, the North Dakota Department of Health (NDDH) provided its prevention of significant deterioration (PSD) increment consumption modeling analysis to EPA that found numerous violations of the Class I 3-hour and 24-hour increment for sulfur dioxide (SO<sub>2</sub>) in four Class I areas: all three units of Theodore Roosevelt National Park (TRNP), the Lostwood Wilderness Area, the Medicine Lakes Wilderness Area in Montana, and the Fort Peck Class I Indian reservation. On February 1, 2000, EPA stated that NDDH's 1999 modeling analysis was "technically sound and consistent with EPA's Guideline on Air Quality Models and the recommendations of the Interagency Workgroup on Air Quality Modeling for evaluating Class I area impacts" (EPA's February 1, 2000 letter to NDDH). On April 14, 2000, NDDH used its modeling analysis to deny a permit to the Minnkota Power Cooperative to increase capacity at its existing power plant (NDDH's April 14, 2000 letter to Minnkota Power Cooperative).

Apparently due to pressure from the major polluters in North Dakota, NDDH recently revised its modeling analysis to show there are no violations of the PSD increment for SO<sub>2</sub>. EPA's 2002 draft modeling analysis also appears to be an improper effort to reduce the scope and magnitude of the existing prevention of significant deterioration (PSD) increment violations in the nearby Class I areas.

The following table shows the results of NDDH's 1999 analysis as compared to EPA's 2002 analysis:

Class I Area		NDDH's 1999 3-hr Predictions	EPA's 2001 3- hr Predictions	NDDH's 1999 24-hr Predictions	EPA's 2001 24- hr Predictions
TRNP, South Unit	2 <sup>nd</sup> High # Violations	45.0 $\Phi\text{g}/\text{m}^3$ 6	31.4 $\Phi\text{g}/\text{m}^3$ 3	13.4 $\Phi\text{g}/\text{m}^3$ 9	12.8 $\Phi\text{g}/\text{m}^3$ 9
TRNP, North Unit	2 <sup>nd</sup> High # Violations	43.0 $\Phi\text{g}/\text{m}^3$ 8	31.4 $\Phi\text{g}/\text{m}^3$ 2	12.7 $\Phi\text{g}/\text{m}^3$ 21	10.5 $\Phi\text{g}/\text{m}^3$ 8
TRNP, Elkhorn Unit	2 <sup>nd</sup> High # Violations	36.5 $\Phi\text{g}/\text{m}^3$ 1	< 25 $\Phi\text{g}/\text{m}^3$ 0	13.2 $\Phi\text{g}/\text{m}^3$ 9	11.4 $\Phi\text{g}/\text{m}^3$ 5
Lostwood Wilderness Area	2 <sup>nd</sup> High # Violations	34.3 $\Phi\text{g}/\text{m}^3$ 4	< 25 $\Phi\text{g}/\text{m}^3$ 0	8.6 $\Phi\text{g}/\text{m}^3$ 14	7.7 $\Phi\text{g}/\text{m}^3$ 9
Medicine Lakes Wilderness Area	2 <sup>nd</sup> High # Violations	30.2 $\Phi\text{g}/\text{m}^3$ 1	25.9 $\Phi\text{g}/\text{m}^3$ 1	7.1 $\Phi\text{g}/\text{m}^3$ 3	5.9 $\Phi\text{g}/\text{m}^3$ 2
Fort Peck Indian Reservation	2 <sup>nd</sup> High # Violations	33.5 $\Phi\text{g}/\text{m}^3$ 1	< 25 $\Phi\text{g}/\text{m}^3$ 0	7.4 $\Phi\text{g}/\text{m}^3$ 3	6.3 $\Phi\text{g}/\text{m}^3$ 2

The results of NDDH's original 1999 analysis should define the magnitude of emission reductions needed, not EPA's relaxed January 2002 analysis and especially not the NDDH's most recent analysis (not yet out, to our knowledge, for public review). As discussed below, NDDH's 1999 analysis may not be conservative enough, since the state did not use several regulatory defaults in its 1999 modeling analysis resulting in lower predicted concentrations and because the full amount of increment-consuming emissions from the Milton R. Young plant may not have been included in the modeling.

EPA's January 2002 modeling analysis does not comply with its own guidance on increment consumption, and thus DRC does not support it. Our specific comments are as follows:

#### 1. Current Emissions of Increment-Consuming Sources

In its January 2002 modeling analysis, EPA chose to model the power plants at the 90<sup>th</sup> percentile value of their current emission rates. EPA justified use of the 90<sup>th</sup> percentile value because it is highly unlikely that all sources would be operating at their peak emission rate during the same 24-hour period. DRC strongly disagrees with this assumption for power plants. In a time of peak electricity demand and, especially, when demand exceeds supply which has occurred fairly often over the last few summers, it is very likely that all electrical generating units will be operating at maximum capacity at the same time. Unless EPA can show that all of the power plants would never operate at their maximum capacity simultaneously on a short term basis, then it is not justifiable to model these sources at anything less than their actual maximum emission rates. DRC also questions what the regulatory or statutory basis is for EPA's decision to use the 90<sup>th</sup> percentile emission rate. The short term increments already have some flexibility built in by allowing one exceedance of the short term increments per year. (See 40 C.F.R. § 52.21(c); § 33-15-15.2.b. of the North Dakota Administrative Code (N.D.A.C.)). An analysis of compliance with ambient standards is supposed to be conservative to err on the side of ensuring

no violations of the standards. Ignoring the top 10% of actual emission rates from the contributing sources in North Dakota is not acceptable, especially for the short term 24-hour and 3-hour average increments and especially when it is not unlikely that all power plants will be operating at their maximum capacity concurrently.

DRC also questions why EPA used the 90<sup>th</sup> percentile of the average 24-hour emission rate to determine compliance with the 3-hour SO<sub>2</sub> increments. This approach is not even remotely conservative for protection of the 3-hour increments. EPA must instead model each source's peak hourly emission rate averaged over 3- hours.

Further, the August 7, 1980 preamble to the PSD regulations states that:

EPA believes that, in calculating actual emissions, emissions allowed under federally enforceable source-specific requirements should be presumed to represent actual emission levels....The presumption that federally enforceable source-specific requirements correctly reflect actual operating conditions should be rejected by EPA or a state, if reliable evidence is available which shows that actual emissions differ from the level established in the SIP or the permit.  
45 Fed.Reg. 52718.

EPA's Guideline on Air Quality Models in 40 C.F.R. Part 51, Appendix W, also provides at section 9.1.2:

As a minimum, the source should be modeled using the design capacity (100 percent load). If a source operates at greater than design capacity for periods that could result in violations of the standards or PSD increments, this load should be modeled.

In the case of the North Dakota power plants, EPA has reliable information from continuous emission monitoring (CEM) data showing that many of the power plants are in fact exceeding their allowable emission rates. (See Attachment 1, June 11, 2001 email from Kevin Golden to Amy Platt transmitting table of North Dakota Power Plant CEM Data). This includes Antelope Valley Units 1 and 2, Coyote Station, Coal Creek Units 1 and 2, and Milton R. Young Unit 2. In addition, nothing prohibits the other units from operating at their allowable emission rates. Thus, DRC believes that the highest of actual or allowable emission rates of all sources must be considered in the increment analysis. When and if the above-listed sources come into compliance with their allowable emission limits, then these violating sources can be modeled at allowable emission rates. If EPA plans to allow sources to be modeled at their 90<sup>th</sup> percentile current emission rates, then EPA must require a commensurate reduction in those sources' federally enforceable allowable emission rates to reflect the 90<sup>th</sup> percentile emission rate.

DRC also does not agree with EPA's using only the year 2000 CEM data from Coal Creek Units 1 and 2, which EPA justified due to Coal Creek's reduction in emissions in 2000 by reducing their bypassing of the SO<sub>2</sub> emissions controls. How does EPA know that the year 2000 is representative of normal source operation, when Coal Creek has apparently been bypassing their SO<sub>2</sub> control equipment for years? Unless the reduced emission rates are to be made

federally enforceable, then DRC contends that this source must be modeled at its highest actual emission rate which, in 1999, was above Coal Creek's allowable emission limit. There are no guarantees that the units will continue to be operated in this manner in the future without federally enforceable requirements.

## 2. Baseline Emissions

The Clean Air Act definition of baseline concentration in § 169(4) generally provides that the baseline concentration reflects the air quality at the time of the minor source baseline date. EPA elaborated on this statutory definition in its definition of baseline concentration at 40 C.F.R. § 52.21 (b)(13), which states that the baseline concentration shall include:

The actual emissions representative of sources in existence on the applicable minor source baseline date, except as provided in paragraph (b)(13)(ii) of this section.

40 C.F.R. § 52.21(b)(13)(ii) provides:

The following will not be included in the baseline concentration and will affect the applicable maximum allowable increase(s):

- (a) Actual emissions from any major stationary source on which construction commenced after the major source baseline date; and
- (b) Actual emissions increases and decreases at any stationary source occurring after the minor source baseline date.

North Dakota has adopted this Federal definition at §33-15-15-01.1.d. of the N.D.A.C..

"Actual emissions" are defined at 40 C.F.R. §51.21(b)(21) (and also at §33-15-15-01.1.a of the N.D.A.C.) as follows:

"Actual emissions" means the actual rate of emissions of a pollutant from an emissions unit, as determined in accordance with paragraphs (b)(21)(ii) through (iv) of this section.

(i) In general, actual emissions as of a particular date shall equal the average rate, in tons per year, at which the unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation. The Administrator may allow the use of a different time period upon a determination that it is more representative of normal source operation. Actual emissions shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.

While subparagraph (ii) to this definition allows the permitting authority to presume the source-specific allowable emissions are equivalent to actual emissions, the same principles discussed above from the 1980 preamble must apply. That is, the allowable emissions could only be considered as the baseline emissions if the EPA has reliable evidence showing that the sources operate at their allowable emission rate. Based on the emission inventory reports that

each source submitted to NDDH in the years 1976 and 1977, it does not appear that there is sufficient information (and thus no reliable evidence exists) to know whether any of the existing power plants were operating at their allowable emission rates. While the reports show maximum hourly fuel usage, the reports do not make clear the heating value and sulfur content at the time of the maximum hourly fuel usage which are necessary to calculate maximum hourly emission rates. It also is not clear whether any of these facilities were subject to source-specific allowable emission rates at the time of the baseline concentration.

As stated above, DRC does not support the use of the 90<sup>th</sup> percentile values for current emissions. DRC also does not support EPA's estimation of the 90<sup>th</sup> percentile values from the 1977-78 timeframe by using the ratio of current 90<sup>th</sup> percentile peak emission rates to current average emission rates. While we realize this was intended to provide for consistency between current and baseline emission rates, we don't think it makes sense to assume that a power plant's current ratio of peak to mean emission rates reflects how it was operating in the 1970's. According to data obtained from the Energy Information Administration (EIA) website, the peak electricity demand in summer has increased at almost twice the rate of increase in annual electricity consumption over the last fifteen years. (See the Annual Energy Review data from the following website: <http://tonto.eia.doe.gov/aer/index2000.htm>, summarized in Attachment 2). Thus, EPA's proposal to apply the current 90<sup>th</sup> percentile peak to mean ratio to each source's average emission rate from 1977-1978 has the likely impact of inflating the 90<sup>th</sup> percentile emission rates from 1977-1978 from each of the power plants in North Dakota, and an inflated baseline rate of emissions will result in less increment-consuming emissions modeled from each source.

For all of the above reasons, DRC believes that, consistent with the Federal and state PSD regulations, the baseline emissions should be estimated based on the actual average emission rate of each source, using the average daily coal throughput, average sulfur content, and average heating value. It appears that EPA has all of the necessary information to make these calculations, through the various source's emission inventory submittals to NDDH. This is most consistent with the August 7, 1980 preamble, whereas the EPA's unjustified adjustments to average emissions are not.

### 3. Milton R. Young Plant

DRC is aware that EPA has initiated an enforcement investigation by, at the least, requesting documents via a September 29, 2000 request under section 114 of the Clean Air Act from the Minnkota Power Cooperative regarding Milton R. Young's compliance with the PSD permitting regulations. DRC has not yet seen all of those documents, since Minnkota claimed some of the documents as confidential business information and EPA still has not made a determination about the validity of Minnkota's claim. However, we know from an August 20, 2001 email from Kevin Golden to you and others in EPA Region VIII (Attachment 3) that EPA did an analysis to see what the effect on the increment violations would be if control technology (presumably best available control technology) was applied at both units. If EPA has found that the Milton R. Young Plant has undergone a modification (i.e., physical change or change in the method of operation), then *all* of the facility's emissions must be modeled as increment-consuming, pursuant to the definition of "baseline concentration" in 40 C.F.R. § 52.21(b)(13)(ii)

(as well as in § 33-15-15-01.d(2)(a) of the N.D.A.C.) which reads:

The following will not be included in the baseline concentration and will affect the applicable maximum allowable increase(s):

(a) Actual emissions from any major stationary source on which construction commenced after the major source baseline date....

Because "construction" is defined at 40 C.F.R. §52.21(b)(8) and §33-15-15-01.1.1 of the N.D.A.C. as including modification, a modification at the Milton R. Young plant would take all of the facility's emissions out of the baseline concentration.

EPA's investigation was likely spurred by Minnkota's noncompliance with its SO<sub>2</sub> emission limits. Although NDDH denied Minnkota's November 1995 request to increase the maximum heat input capacities of each of its boilers on April 14, 2000, both units continue to operate above their maximum allowed heat input capacities and thus both units are violating their allowable SO<sub>2</sub> emission rates. In addition, NDDH issued a revised state operating permit to Minnkota on February 5, 2002, that appears to allow for the increase in heat input capacity for emissions of NO<sub>x</sub>. (The pound per hour NO<sub>x</sub> limits listed in Condition 7.A. of the permit are based on the 0.86 lb/mmBTU limits multiplied by the heat input capacities requested in Minnkota's November 20, 1995 permit revision request. See Attachment 4.) While this permit did not revise the heat input ratings or the allowable SO<sub>2</sub> emission rates, it appears that NDDH is approving the increased heat input capacities at least for NO<sub>x</sub> emissions. However, if the increase in heat input capacity was due to a physical or operational change that resulted in a significant increase in emissions of any pollutant (and DRC sees no other reason for the increase in capacity but a major modification to the facility), then BACT must be met at all units with significant emission increases and all of the facility's emissions would be considered increment-consuming.

Thus, it is imperative that EPA publically determine Minnkota's compliance with the PSD permitting requirements now, so that it is clear how the facility's emissions are to be modeled and also to ensure that Minnkota is not violating PSD permitting requirements including best available control technology (BACT) requirements.

#### 4. Modeling Inputs

NDDH changed several of the default values in the Calpuff/Calmet model which EPA has also included in its modeling effort. DRC contends that the default inputs must be used in the modeling, unless it can be verified that the NDDH settings are reflective of what is actually occurring. According to your cover letter, when the NDDH settings were compared by your office to the regulatory default settings "more typically used in regulatory applications," you found that the default settings resulted in maximum 24-hour concentrations that were 50% higher than the modeling results obtained under NDDH's setting. NDDH compared the model using its settings to data from two ambient air quality monitoring sites to justify these changes. A comparison to only two monitoring stations is not adequate to show that the NDDH settings are reflective of actual conditions throughout the area. Further, the results of NDDH's comparison shown in Figure 2-2 of EPA's January 2002 report do not show a good correlation between

Calpuff predicted and TRNP South Unit observed SO<sub>2</sub> concentrations for the 24-hour averages and, in fact, show that NDDH's settings are under predicting observed concentrations. Thus, EPA should not accept use of these changes to regulatory defaults. Considering the expected growth in emissions from new power plants as well as from oil and gas exploration, EPA should err on the side of conservativeness in protecting the PSD increments not on the side of protecting industry from necessary reductions in emissions.

Thank you for the opportunity to submit these comments on EPA's modeling analysis. We hope that a final determination of the extent of the existing PSD increment violations will be made quickly, that EPA's decisions regarding the modeling analysis are made to ensure continuous protection of the increments in these Class I areas, and that EPA will formally require NDDH to revise its SIP to address these violations as soon as possible.

Sincerely,

Attachments

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